



FAME Status

November 29, 2001



Outline



- **PDR Issues**
 - 7925-10 Spacecraft Design
 - CCD Procurement
 - Optics Development
 - Data Analysis Algorithm Development
 - Instrument Software Development
- **Contract Status**
 - LMMS - ATC
- **Action Items/RFA**
 - Updates to the baseline



7925-10 Spacecraft Design



- **Completed Structural Design and Layout of Single 31” Propellant Tank**
 - **Electronics Deck Layout Complete**
 - **Mass Properties and Inertias meet requirements**
 - **No impact to ACS system**
 - **>20% Observatory Mass Growth available**
 - **Finite Element Model Analysis has been initiated**
 - **Results by end of CY01**
 - **Updated Thermal Analysis in Process**
- **No Observatory Cost Impacts for 7925-10 Design**
 - **Potential for reduced costs in Procurement of STAR-37 AKM**



CCD Procurement



- **SITe Continues to Work FAME CCD Procurement**
 - **Allowing SITe to change Wafer material to improve yield**
 - **Slight Change in performance; meets Science Requirements**
- **Second CCD Source Procurement**
 - **Contract for Second CCD Source to be awarded by Dec 7th**
 - **Revised Spec/SOW Generated**
 - **Initial Proposals received from STA and Marconi**
 - **STA chosen (pending award)**
 - **Product closely matches FAME design**
 - **Initial Wafers (24) from foundry by end of March '02**
 - **Represents 96 potential devices**
 - **Front-Side Parts (2) by End of April**
 - **Back-Side Parts (2) by End of May**



STA Recent Experience



RECENT STA TECHNICAL PERFORMANCE

During the last two years STA has been successful fabricating several large area CCD focal plane arrays. The customers include Lockheed and JPL for three large area devices. Each was fabricated on 6" wafers at Zarlink (Mitel). All of these devices exhibited DC shorts yield in excess of 50% for a total of six lot runs.

CUSTOMER	CCD	APPLICATION	Contact
Lockheed Space Systems	30 micron 512x819 Backside thinned 500fps 14 outputs	Space Lightning Mapping	Earl Aamodt 650-4243280
Lockheed Management and Data Systems	15 micron 3k x 4k 24 fps 16 outputs 40MHz per output	Cinematography Camera	Bill Hill 408-4736368
JPL	15 micron 4k x 4k 1 fps 4 outputs 1Mhz max per output	Astronomy apps Low noise <2 elec	Dr Mark Wadsworth 818-3547833



Optics Progress



- **Delta-PDR Conducted by Goodrich on November 27, 2001**
 - **Vibration issue with Compound mirror has been resolved with updated design**
 - **No relaxation in Vibration Requirements necessary**
- **Goodrich Schedule is being Maintained**
 - **Partial Shipment of Blanks have been received and are in inspection**
 - **Initial Shaping of Secondary Mirror and Fold Flat to begin Early December**
- **Communication between Goodrich Optics designers and Science Operations Team**
 - **Point Spread Function Centroiding Discussion**

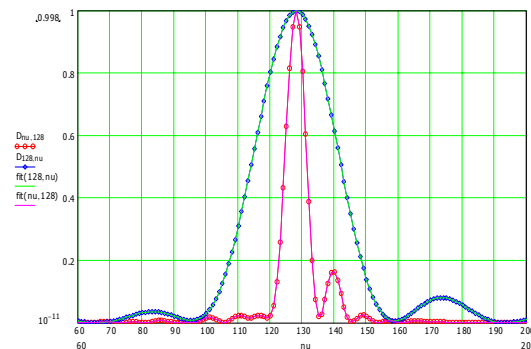


Data Analysis Algorithm Development

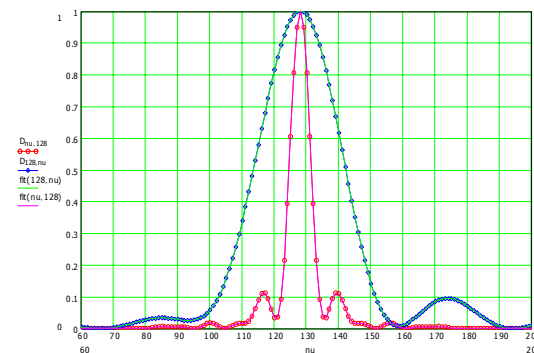


- Prototyping of all Data Analysis Pipeline Algorithms continues.
- Goodrich and Science Operations teams have made progress on centroiding issues (determination of stellar position).
- Previous efforts to reduce centroiding errors involved reduction of the rms wavefront error. Recent work indicates that controlling PSF asymmetry during optics fabrication may prove to be a superior method of mitigating centroiding errors.
- Near Term Activities:
 - Determination of how much asymmetry can be controlled during fabrication and operation
 - Determination of how much PSF asymmetry can be tolerated by data analysis pipeline centroiding algorithms

As built in-scan, cross scan PSF



As built in-scan, cross scan PSF.
Fabrication asymmetry correction
applied in-scan





Instrument Software



- **Algorithm Implementation Continues**
- **Fame Attitude and Rate Determination**
 - Work in progress, draft algorithms available by 11/30.
- **Centroiding of Guide Stars for FAME**
 - Preliminary version complete, release pending
- **Concept for Generating Commands for CCD Charge Injection and CCD Readout**
 - Released but requires updates
- **Meetings between NRL/Lockheed during week of December 3rd to be held in Palo Alto.**



Contract Status - LMMS ATC



- **Phase B Contract with LMMS-ATC was due to expire on November 30, 2001**
- **No-Cost Extension granted to December 31, 2001.**
 - **Results in reduced staff for month of December to continue Optics and CCD developments**
- **Decision to further extend contract must be made by December 7**



Action Items/RFA



- **Action Items from PDR being worked**
- **Updates to Program Baseline Planned for Following:**
 - **Engineering Level EMI test with Engineering Model Focal Plane Assembly**
 - **Vibration Test of Instrument At Lockheed prior to Instrument TVAC**
 - **Eng. Model Controller to be verified during Instrument TVAC**
 - In addition to previous compatibility tests